

REMARKS

Claims 1-29 are all the claims pending in the application.

Applicant has amended to title to correct a typographical error. Applicant has also amended the claims to better conform them to the English language and U.S. patent practice. The amendments are not intended to narrow the scope of the claims.

PRIOR ART REJECTIONS

The Examiner rejected claims 1-6, 8, 9, 14, 23, 24, 26-29 as being anticipated by US2002/0096107 to Fujishima. Applicant traverses these rejections because Fujishima fails to disclose or suggest all of the claim limitations. Specifically, Fujishima fails to disclose at least an emitter for light sources and bringing the emitter to incandescence through the passage of electric current.

Regarding independent claims 1 and 26, the Examiner alleges that Fujishima discloses a process to make an emitter for light sources which can be led to incandescence through the passage of electric current. However, Fujishima relates to a process for manufacturing an electron emission source (see for instance paragraphs 4 and 46), i.e., an electrode or, more precisely, a field emission cathode. An electrode of this kind neither emits light, nor is brought to incandescence. Applicant also notes that the paragraphs cited by the Examiner for support (37-44), fail to mention or suggest the emission of light and bringing an emitter to incandescence. Therefore, for at least these reasons, Applicant requests that the Examiner withdraw the prior art rejection of claim 1.

Dependent claims 2-6, 8, 9, 14, 23, 24 and 27-29 should be allowable at least based on their dependence from claims 1 or 26 for the reasons described above.

In addition, regarding claim 8, Fujishima fails to disclose or suggest a material deposited as a film onto the alumina layer. In Fujishima, diamond nano-particles are inserted in the pores of alumina, and then the particles are then conducted to the vapor phase for growing a diamond structure.

Regarding claim 24, Fujishima fails to disclose or suggest reliefs that comprise an antireflection microstructure. Unlike claim 24, which relates to an incandescence light emitter, it would not make sense to provide an antireflective surface in an electron emission source (i.e., a cathode) as disclosed by Fujishima, which does not emit light. Likewise, regarding claim 25, it would not make sense to provide a photonic crystal structure in an electron emission source.

The Examiner rejected claims 7, 10, 12, 13, 21 and 22 as being unpatentable over Fujishima in view of Iwasaki. Applicant traverses these rejections because the cited references fail to disclose or suggest all of the claim limitations and one of skill in the art would not have been motivated to combine the references to arrive at the claimed invention.

First, these claims should be allowable at least based on their dependence from claim 1 for the reasons described above because Iwasaki fails to make up for the deficiencies of Fujishima.

Iwasaki discloses a nano-structure having an anodized film including completely cut-through nano-holes having good uniformity of shape, wherein the anodized film is formed on a substrate including at least one material selected from the group consisting of semiconductors, noble metals, and carbon. In the preferred structure (see fig. 2) the pores of the anodized film have an “upper” diameter $2r$, a lower diameter $2r'$ and an intermediate narrowing 16.

All the embodiments provided for in Iwasaki include the anodized porous film, which is an essential part of the desired nano-structure (see for example, independent claims 1, 2, 9 and 24 of Iwasaki). Therefore, the anodized film is not a sacrificial element during the manufacturing process.

In certain embodiments of Iwasaki, the structure includes a single filler or a layered filler in the pores of the anodized film (figs. 11, 14); in a further embodiment the anodized film is also exploited as a mask for etching a substrate (fig. 12a), but it is still kept in the final nano-structure; in other embodiments of the nano-structure the pores of the anodized film serves for hosting carbon nano-tubes (fig. 18).

The nano-structure of Iwasaki appears primarily intended for use as an electron emitter, a carbon nano-tube device or an electrochemical sensor. The description (column 12, lines 21-27) incidentally mentions that a phosphor or a fluophor could be included in the nano-structure, to realize a light emitting device. However, the fact remains that the anodized film is not a sacrificial element - it must be kept in the structure. In addition, phosphors or fluophors are not lead to incandescence by passage of electric current; rather, they are substances that exhibit the phenomenon of phosphorescence, i.e., sustained glowing without further stimulus.

Therefore, one ordinary skilled in the art would not combine the conflicting teaching of Fujishima (dissolving the anodized film) and Iwasaki (keeping the anodized film) to attain the subject matter of claims 7, 10, 12, 13, 21, 22.

In addition, regarding claim 7, Applicant disagrees with Examiner's position that column 10, line 35 - column 11, line 10 of Iwasaki discloses a step of anodizing a metal underlying the

alumina layer. This portion of Iwasaki merely relates to anodization of an aluminum film, just for obtaining alumina. Claim 7 requires that the layer underlying alumina be anodized.

Applicant also disagrees with the Examiner's position regarding claim 10. In claim 10, the anodized film and the metal film are removed for obtaining the desired components, whereas in Iwasaki both the anodized film and the metal film are essential parts of the desired final structure. The same comment applies to the rejection of claim 12. The teachings of Fujishima and Iwasaki are clearly conflicting.

Regarding claim 13, it provides for anodizing the substrate of the alumina layer so that local parts of the substrate can grow into pores of alumina after having broken the non porous portion of alumina. There is nothing in Fujishima or Iwasaki that suggests this step. As mentioned above, the passage at column 10, line 35 - column 11, line 10 of Iwasaki does not relate to anodization of the substrate of alumina; on the other hand the passage at column 12, line 50 - column 13, line 30, mentioned by the Examiner, explains that alumina can be used as a mask for forming certain areas of the substrate by evaporation, not by anodization. In addition, the use of alumina as a mask according to Iwasaki requires previous removal of the nonporous part of alumina, which is in clear contrast with the wording of claim 13.

Likewise, regarding claims 21 and 22, the alumina layer is never completely removed by the nano-structure of Iwasaki, contrary to the Examiner's statements.

The Examiner rejected claim 11 as being unpatentable over Fujishima in view of Tanaka. Applicant traverses this rejection because the cited references fail to disclose or suggest all of the claim limitations.

First, this claim should be allowable at least based on its dependence from claim 1 for the reasons described above because Tanaka fails to make up for the deficiencies of Fujishima.

Tanaka relates to an electron emission cathode, i.e., exactly the same subject matter of Fujishima (and most of Iwasaki), which has nothing to do with a light emitter which can be led to incandescence through the passage of electric current. The passage cited by the Examiner states that a possible method for producing an electron emission cathode includes the steps of preparing a paste including diamond particles and n-type semiconductor powder or carbon powder, then applying the paste on a substrate and finally sintering the paste. However, there is no explanation as to how an electron emission cathode made of a sintered paste of diamond particles and n-type semiconductor powder or carbon powder could be brought to incandescence to emit light.

The Examiner rejected claims 15-19 and 25 as being unpatentable over Fujishima. Applicant traverses this rejection because the cited reference fails to disclose or suggest all of the claim limitations.

First, these claims should be allowable at least based on their dependence from claim 1 for the reasons described above. As mentioned above, Fujishima does not relate to incandescence light emitters. Additionally, none of the documents cited by the Examiner disclose or even suggest the use of a further template as claimed for forming incandescence light emitters. It appears that the Examiner is impermissibly relying on hindsight.

The Examiner rejected claim 20 as being unpatentable over Fujishima in view of Tanaka. Applicant traverses this rejection because the cited references fail to disclose or suggest all of the claim limitations.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. APPLN. NO.: 10/523,214

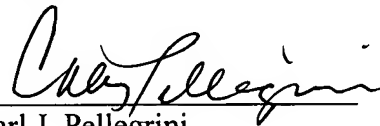
ATTY MATTER NO.: Q85361

This claim should be allowable at least based on its dependence from claim 1 for the reasons described above.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


Carl J. Pellegrini
Registration No. 40,766

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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